SHIPS' SAFETY BULLETIN

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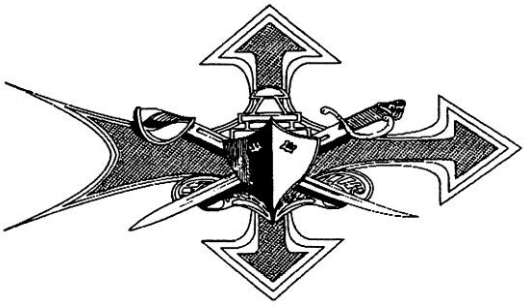

APRIL-SEPTEMBER 2010

Suggested routing should include CO, XO, department heads, division officers, CMC, CPO mess, petty officers' lounge, work-center supervisors, and crew's mess.
Blanks provided for initials following review:

Refrigerant Usage Logs

By MMC (SW/AW) Esters Wright, Naval Safety Center

During our safety surveys, I often find many discrepancies with refrigerant usage logs. The most common discrepancies noted include:

- Tracking of refrigerant usage/procurement is inaccurate and ineffective.
- Day-to-day service maintenance report logs are not being utilized to document corrective and planned maintenance.
- Venting forms are not being used to track refrigerant loss.
- Logs are not being routed to the engineer officer for signature and retained onboard for 3 years.

Remember, the annualized leakage rate from shipboard chilled water air conditioning plants should not exceed 15% of the total installed charge and the annualized leakage rate from ship stores and cargo refrigeration systems should not exceed 35% of the total installed charge. Ref: NSTM 516-1.11, (FIG 516-1-9, 516-1-10, 516-1.11.2 (1) PMS MIP 5161 (MRC U-1) and MIP 5140 (MRC U-2).

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Are You Ready for Divers?

By EMCS(SW) Andrew Fanning, Naval Safety Center

The goal of the Navy's anti-terrorism program is to deter, detect, defend, mitigate, and conduct consequence management of terrorist acts against the Navy. It is of vital importance that commanding officers develop and implement plans to reduce the likelihood of terrorist attacks and mitigate the effects should one occur. Emergency diver tag-out procedures are part of these

plans. Unfortunately, during many surveys of surface ships, I find that most ships are not prepared properly to deploy divers over the side in a timely fashion.

According to COMNAVSURFOR-INST 3300.1B, *Antiterrorism/Force Protection Program*, ships must prepare an emergent diver isolation guide list to support the minimum tags necessary to isolate the equipment electrically and inhibit its operation. Part of this list will be "pre-fabricated tags and tag-out sheets" that will be maintained in a ready-to-hang state. These tags and tag-out record sheets (TORS) will be filled out with everything needed for presentation to the authorizing officer except for signatures, dates, and times. Having these tags and TORS ready, will expedite divers getting into the water to check your ship's hull.

Now that ships are using the Shift Operations Management System (SOMS), many Sailors thought they no longer had to maintain these tags and TORS. Unfortunately, SOMS can not support pre-prepared tags, tag record sheets, or line-item record sheets. Therefore, it is imperative that our ships recreate these "manual" tags and TORS for divers. I recommend when you create this TORS, assign each piece of equipment its own line. This will allow the authorizing officer to select which equipment to authorize and allow necessary equipment to remain online.

COMNAVSURFORINST 3300.1B requires the review of these tags and TORS semiannually and after any plant or ship configuration change. The commanding officer is the reviewing authority for the tag-out sheet and is required to sign the TORS to certify it. Commands should practice these emergent tag-out procedures during duty section training at least semiannually. I also recommend keeping these tags and TORS in a controlled location where the authorizing officer (usually the engineering duty officer), can access them easily.

Force protection is an overarching program designed to protect our Navy. Having an emergent diver tag-out is a small but crucial part of a ship's response plan. Does your ship have pre-prepared tags and TORS as part of its emergent diver tag-out procedures?

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Storage of Calcium Hypochlorite

By CDR David Horn
Naval Safety Center

Recent safety surveys have revealed major problems with the storage of calcium hypochlorite. Calcium hypochlorite is a disinfectant agent used on ships for the emergency purification of potable water and the decontamination of biological and chemical (B/C) agents. It is an extremely strong oxidizer and will react with rags, fabrics, antifreeze, ammonia, paints, oils, greases, detergents, acids, and alkalis. When heated, calcium hypochlorite decomposes to chlorine gas, phosgene, and other toxic and corrosive gases. Accidental contact with moisture causes formation of toxic chlorine gas. Additional handling and

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use practices are provided in NSTM 470, *Shipboard BW/CW (Biological Warfare/Chemical Warfare) Defense and Countermeasures*, and NSTM 533, *Potable Water Systems*.

Ready-use calcium hypochlorite issued to the medical and engineering departments shall be stored in a locked box mounted on a bulkhead. No more than 48, six-ounce bottles shall be stored in any one locker. Recommend a metal box, such as a first-aid locker (NSN 1H 2090-00-368-4792). Ships should ensure that they have sufficient lockers to store the amount of calcium hypochlorite they are required to carry. Drill at least three 1/4-inch vent holes in the bottom of the box to allow release of any chlorine products and paint the box gray. Label all calcium hypochlorite storage spaces, lockers, and cabinets with red letters on a white background. Don't use flammable liquid or corrosive commercial lockers to store calcium hypochlorite.

One of the major problems we find on safety surveys is that PMS is not being conducted or is being conducted improperly. Ensure you conduct the PMS on MIP 6521/601.

Store calcium hypochlorite in well ventilated areas. Don't store calcium hypochlorite in machinery spaces, storerooms, flammable liquid or compressed bottle stowage areas, hazmin centers, berthing spaces, or oil and water test laboratory areas. Don't store it in areas used for the stowage of greases, oils, paints, or other combustible materials. Keep calcium hypochlorite lockers away from oil lines and other potential sources of combustible material, and at least 5 feet from any source or surface which may exceed 51.7°C (125°F). Storage areas shall not be subject to condensation or water accumulation. To help reduce off gassing of chlorine gas individual six-ounce bottles may be put in a plastic bag and sealed (zipped) shut.

A calcium hypochlorite locker that lacked PMS. Bottles were expired and all items stored in the locker had deteriorated.

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Galley "Fail Safe" Thermostatic Safety Switches

By EMCMS (SW/AW) Jim Burke, Naval Safety Center

Often overlooked, fail-safe galley thermostatic Detroit switches can be the difference between localizing a fire to the galley or allowing it to spread into the ventilation system and other compartments. These thermostatic switches are located at intervals of one per transition piece of exhaust ventilation for the grease interceptor

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hoods in the galley. Many times, these switches are behind false overheads and require removing riveted panels for access. If the switches are difficult to access or not accessible at all, submit a work request to have the proper access panels installed to allow for maintenance.

These switches are calibrated to close and shut down the grease interceptor hood dampers and fans when the temperature reaches 250 degrees Fahrenheit. This serves to isolate and prevent the spreading of a fire in the duct system caused by heat-producing galley equipment.

Previously, the calibration of these switches was conducted under work center EE02 using MIP 5121/016 A-12. However, "A-12" no longer exists. Instead, maintenance is now covered under MIP 5121/016 U-22 as "unscheduled maintenance." The U-22 check provides the specifications for calibrating the fail-safe thermostatic switches and directs the work center to coordinate with the ship's gauge calibration work center on mandatory related-maintenance checks MIP 9801/002 U-30 or U-7. The gauge calibration petty officer uses one of these two procedures as determined by what type of tester/calibration unit the ship has onboard.

Only a certified gauge calibration petty officer with the applicable NEC may perform this check. If you don't have one aboard your ship, MIP 5121/ U-22 directs you to submit thejob to your FMA (fleet maintenance activity) so an outside activity may perform the maintenance.

Under "Note 1" of the 5121/016 U-22 check, work centers are directed to, "accomplish as required by the TYCOM Calibration Recall Program." This is usually where the disconnect occurs and maintenance falls through the cracks. A CRL (calibration recall list) is provided to the gauge calibration petty officer from the type commander. This list should have all associated shipboard calibration items listed with associated periodicities; however, sometimes not all thermostatic safety switches exist on this list.

It is imperative that the E-division work center supervisor identify all fail-safe thermostatic switches associated with all Gaylord hoods and ensure all are listed on the shipboard CRL maintained by the gauge calibration work center. These switches require **annual** calibration.

Out-of-calibration galley thermostatic switches are a common safety survey discrepancy. Worse yet, many Sailors do not understand the purpose of these switches which could become the difference between ship survivability and an out-of-control fire. Do you know where **your** fail-safe thermostatic switches are and when they were last calibrated?

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Flexible Hose Inspections

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By CDR Mark Hochstetler
Naval Safety Center

Flexible hose assemblies (FHA) contain fluids under pressure and are required to absorb the movement of resiliently mounted equipment under normal operating conditions and the extreme conditions of shock and vibration. FHAs are manufactured using a variety of materials, including rubber, polytetrafluoroethylene (PTFE or Teflon), thermoplastic and metal.

Synthetic rubber FHAs are defined as critical or non-critical according to guidance contained in paragraph 11.4 of NAVSEA S6430-AE-TED-010 Volume 1 and are further categorized by age and length of service. Teflon, thermoplastic and metal FHAs do not have limiting shelf or service lives and should last the life of the ship if not abused.

PMS MIP 5000 requires an annual, visual inspection of the critical hoses less than 12-years old and all non-critical flexible hoses. The A-1 MRC applies to Teflon, thermoplastic, and wire-braided FHAs and the A-2 MRC applies to synthetic rubber FHAs. Critical synthetic rubber hoses with a service life extending beyond 12 years are visually inspected semi-annually according to MRC "S-1," which supports the implementation of the critical flexible hose extension program and continues until hoses reach the target service life of 20 years.

The most common flexible hose deficiencies noted during recent surface ship safety surveys are:

1. Lagging pads installed that are not designed to be removed to facilitate annual inspection or removable lagging pads that do not appear to have ever been removed/disturbed.
2. Missing hose identification plates.
3. Paint on the hose cover of synthetic rubber hoses.

PMS addresses each of these deficiencies, specifically:

The A-1, A-2 and S-1 MRCs all contain verbiage regarding insulation/lagging pads. Each MRC states "Lagging/ insulation, when installed on hose assemblies, shall be of a removable type to facilitate removal for periodic inspection of the flexible hose. Where hard lagging/insulation is installed on piping hose assemblies, it shall be replaced with removable pad at the next availability." Lagging pads that appear never to have been removed call into question the accuracy of equipment guide lists (EGL) used to conduct PMS. EGLs are generated by each work center supervisor and must be reviewed for completeness and accuracy and compared with the ship's NAVSEA approved critical/non-critical flex hose list.

1. When FHA identification tags are missing, the U-1 MRC allows retagging of the hose after reviewing appropriate shipboard installation records/data. Additional criteria for retagging are in section 10 of NAVSEA S6430-AE-TED-010, Volume 1.
2. The A-2 and S-1 MRCs identify FHA replacement criteria when the hose cover has paint on it. "If over 10% of hose is painted, hose must be replaced."

Flexible hose inspections are essential to maintaining equipment in

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top material condition. Attention to detail on the part of maintenance personnel, work center supervisors, chief petty officers, and division officers is necessary to ensuring each flexible hose is inspected at the correct time and according to requirements.

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Safety Surveys

By LT Thelma Nash,
Naval Safety Center

When are safety surveys required? There are two references that dictate when a safety survey by the Naval Safety Center of Norfolk, VA is required. The first reference is the OPNAVINST 5100.19E, *Navy Safety and Occupational Health (SOH) Program Manual for Forces Afloat*. It requires surface ships to complete a safety survey once every 36 months. The second reference is COMFLTFOR-COMINST 4790.3 Rev. B CH1, *Joint Fleet Maintenance Manual* Volume IV Chapter 26 Paragraph 26.2.2. It requires surface ships to complete a safety survey within 365 days prior to an INSURV.

A survey consists of a team of nine people coming on board your ship. These team members represent the different areas of shipboard life to include: damage control/gas-free engineering, weapons, combat systems/operations/navigation, auxiliaries/general engineering, main propulsion/general engineering, NAVOSH/medical/hazmat, safety administration, electrical/tag out, and deck/air. Utilizing the check lists that can be found on our website, the members will go through spaces, look at equipment, view instructions and procedures while providing any necessary training to the crew to help make the ship a safer place to work and live.

The safety survey is either a one-day (small boys) or two-day event (large decks). A report is generated and left with the ship upon departure. The ship's safety officer can start the scheduling process for a survey by contacting the Naval Safety Center via the "Afloat-Surface Warfare" webpage or via the contact information below.

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Poor Life Raft PMS Has Repeat Offenders

By BMCS(SW/AW)Burt Higgins,
Naval Safety Center

A day at sea could start out really badly if the bridge watch calls you because your ship just lost a life raft. A few of the questions the chain of command will ask include: Why was the raft lost?; Could it have been prevented?; Who last performed maintenance on them?; and, How can we prevent this in the future?

There are numerous causes that can result in the loss of a life raft; but, most of them point to improper or neglected

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This professional flyer is approved for official distribution to the surface force and to their appropriate staffs, schools and other organizations. The information is designed to advise Department of the Navy personnel of current and emerging safety concerns to enhance their professional development and improve operational readiness. This bulletin should not in itself be used as an authoritative document. However, it will cite the appropriate reference when available.

PMS. MRCs 5832/004 and 5832/009 and Vol I Sec12 of NSTM 583, *Boats and Small Craft*, contain step-by-step procedures on how to secure a life raft in its cradle to prevent this mishap.

During recent safety surveys, I regularly find the following discrepancies with life raft PMS:

- Sea painters were not terminated to the ships structure according to PMS.
- Rafts were stowed in racks with the seam of the upper and lower halves positioned approximately parallel to the base line of the ship. In this position, the drain holes will be at the lowest point of the container and thus allow water to drain from the container and not accumulate.
- Hydrostatic-release devices installed backward or upside down.
- Securing harnesses have cracked rubber coatings, and CRES material is not utilized to secure the harnesses.
- Incorrect type of lashing between hydrostatic-release devices and securing harnesses.
- Lashing on release devices not terminated according to PMS MRCs 5832/004 and 5832/009.

I could list additional problems; but, these give you an idea of the issues out there. Remember that the life raft will take care of you only if you take care of it. LCPOs and LPOs must know what requirements are contained in the MRCs and proactively ensure that their life-saving gear is being inspected properly. Remember to expect what you inspect.

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Hydrogen Sulfide Gas, "The Silent Killer"!

By DCC(SW/AW) John Ralston, Naval Safety Center

Did you know that hydrogen sulfide (H_2S) gas can kill? Over the years, hydrogen sulfide gas has caused severe injuries and fatalities to some of our Sailors. In most cases, the cause was directly attributed to the lack of awareness and use of ORM to consider all the potential risk involved with hydrogen sulfide. Hydrogen sulfide gas overcame a Sailor while performing routine maintenance on a waste drain fitting in the galley. The Sailor was not aware the level of hydrogen sulfide surrounding the waste drain pipe was nearly three times the permissible personnel exposure limit. In this incident, the maintenance was not being performed in an enclosed tank or void; however, the hydrogen sulfide gas that surrounded the waste drain was sufficient to cause serious respiratory injury. This incident brings to light the importance of proper adherence to safety precautions whenever working around potentially toxic atmospheres.

Hydrogen sulfide gas is a toxic gas associated with stagnant and decomposed organic matter that exists in and around enclosed tanks and piping

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systems. This gas is extremely toxic and has a distinct smell of rotten eggs. CHT systems normally are the systems that come to mind when Sailors think about hydrogen sulfide gas; but, other systems such as AFFF, seawater, fuel/oil, and plumbing systems can emit this toxic gas as well.

Supervisors must ensure that maintenance personnel have a thorough knowledge of the maintenance and system on which they are working. Survey the work area and ensure it is well lit and ventilated. Assign a safety observer and review safety procedures. Treat any openings to piping systems the same as a confined space with regards to gas-free requirements. The ship's gas free engineer (GFE) should determine when a hazardous area is safe for personnel to perform work. COMFLT-FORCOMINST 4790.3, Joint Fleet Maintenance Manual (JFMM) REV B CH 1 has included some changes with the ship's gas free responsibilities; however, the important point to remember is to notify the GFE of all work that will be performed on and around toxic gas systems. OPNAVINST 5100.19E, JFMM, Naval Ships' Technical Manual for *Gas Free Engineering* (NSTM 074 V3), *Pollution Control* (NSTM 593), and *Piping Systems* (NSTM 505) outline procedures that ensure safety for working in and around confined spaces and piping systems.

Our Sailors are doing a lot of great work, but as with anything you do, remember to take a few minutes to consider the hazards and risks involved before jumping in and going to work. Don't let the "silent killer" claim you as the next victim!

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General Safety Note Corner:

Most mishaps start with what folks considered a "minor oversight" or an "acceptable chance" just seconds before the pain started. They were doing things that they had done hundreds of times before without any problem. And they got just comfortable enough to let their guard down. Bad things don't happen just to bad people.
- From the archives of the Summary of Mishaps

Human error is responsible for about 85% of all Navy mishaps. Follow the procedures and manage those risks!

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